REMARKS/ARGUMENTS

Claims 1-84 are pending in the present application. Applicant notes with appreciation the Examiner's indication that claims 11-14, 25-28, 39-42, 53-56, and 81-84 are directed to allowable subject matter.

The Examiner has rejected claims 57-70 under 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 101. The Examiner also ejected claims 1-5, 15-19, 43-47, and 57-61 under 35 U.S.C. § 103(a) as unpatentable over Applicant's allegedly admitted prior art, as set forth in the Background of the Invention section of the present application, in view of USP 5,935,177 (Cox). The Examiner also has rejected claims 6-10, 20-24, 48-52, and 62-66 under 35 U.S.C. § 103(a) as unpatentable over the preceding combination, and further in view of Sklar. The Examiner has rejected claims 29-33 and 71-75 under 35 U.S.C. § 103(a) as unpatentable over the initial combination, and further in view of USP 5,805,619 (Gardner). The Examiner has rejected claims 34-38 and 76-80 under 35 U.S.C. § 103(a) as unpatentable over the immediately preceding combination, and further in view of Sklar. Applicant respectfully traverses the prior art rejection, and requests reconsideration and allowance of all of the claims in view of the following arguments.

The undersigned appreciates the courtesies that the Examiner extended during the telephone interview on February 15, 2007. During the interview, the undersigned discussed the foregoing amendments to claim 57 with the Examiner, who indicated that these appeared to address the issues relative to the rejections under 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 101. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw these rejections.

Looking at the prior art rejections, the undersigned noted the following with respect to Cox relative to the present invention:

1) The present invention, as recited in the independent claims, operates on a preamble of a known string of bits. Thus, the input is known. In contrast, Cox, which relates to an aircraft control system, has as inputs an aircraft state signal which describes the current

attitude of the aircraft (not necessarily a known quantity), and a pilot control signal (which varies based on pilot input, and hence is not a known quantity to the system, either).

2) The present invention, as recited in the independent claims, provides a cost function having a minimum value, which is a function of an optimal estimated frequency **and** an optimal estimated phase. In contrast, Cox, particularly in the portions at col. 3, beginning at line 30 which the Examiner cited, does **not** select both an optimal estimated frequency **or** an optimal estimated phase. What Cox does is to try to get an error below a predetermined level, by iteratively varying amplitude, frequency, and phase of a signal. Cox describes this process as progressing toward that threshold value (i.e. a monotonic progression). Once that level is reached, Cox is done finding the right combination, without necessarily having determined whether each of the amplitude, frequency, or phase values is optimal. Rather, the overall combination of the three inputs is what Cox decides on.

During the interview, the Examiner asserted that, beginning at line 39 of col. 3, Cox takes the last solution set (combination of amplitude, frequency, and phase) as the one that yields the smallest error, if that set does not get the error below the predetermined error level. The Examiner viewed this as a minimization of a cost function. However, as the undersigned stated in reply, this sentence has to be taken with the preceding sentence, which indicates that the intent is to get below the predetermined error level. If Cox accomplishes that, there is no need to get any farther below that level and achieve what truly would be the minimum. In any event, as noted in the preceding paragraph of this response, the solution set that Cox would take is not necessarily a set that includes both an optimal estimated frequency and an optimal estimated phase.

The undersigned pointed out also that there is nothing explicit, implicit, or inherent in Cox to suggest that Cox's approach necessarily yields optimal values for both frequency and phase. Indeed, when Cox's iterative approach is found not to yield an error below the given threshold, the last sample combination of frequency and phase is used (col. 3, lines 38-45). In response, the Examiner asserted that Cox's teachings are "broad," and so can be interpreted to read on what Applicant is claiming. Applicant respectfully disagrees. As the undersigned

pointed out during the interview, Cox's failure to be specific about providing something with both an optimal estimated frequency **and** an optimal estimated phase would not suggest to the ordinarily skilled artisan that providing optimal estimates for both values would be desirable, absent some outside teaching. The only such outside teaching comes from the present application. Thus, application of Cox as the Examiner has urged would represent at most an "obvious to try" standard, if not outright hindsight.

Fundamentally, Cox does not suggest to skilled artisans in the communications area that Cox's iterative, progressive approach to minimization of error in estimates of an **unknown** aircraft state signal and an **unknown** pilot control signal, even taking into account iterations based on frequency and/or phase, would have any bearing on data acquisition based on a **known** preamble, which the independent claims of the present application recite. Not only are the technological areas different, leading to an inference of hindsight; the nature of the signals themselves is different.

For example, as Applicant explains relative to a particular embodiment on page 5 of the specification at paragraph 23, and as ordinarily skilled artisans know, preambles in communications signals are known entities, used to calibrate communications channels. In contrast, aircraft state signals and pilot control signals clearly are not. Noise in communications channels is the variable that requires calculation of a cost function according to the invention as recited in the independent claims. In contrast, in Cox, there is no noise – in fact, the relevant embodiment of Cox to the portion of Cox's specification at col. 3, lines 30-45, is the embodiment of Figs. 6A and 6B, described beginning at col. 16, lines 46, and continuing through col. 18, line 61. Near the end of this lengthy passage, Cox states, "The processing of FIGS. 6A and 6B performed by the fourth embodiment of the feature calculator to calculate feature signals provides the advantage that it is relatively insensitive to noise." Col. 18, lines 53-56.

Thus, dealing with noise is not Cox's issue relative to estimation. Rather, the idea in Cox is to see if a pilot control signal is causing a pilot induced oscillation (PIO) requiring correction, thus necessitating the input not only of the aircraft state signal, but also of the pilot control signal

to a PIO detector (Fig. 1 of Cox), to detect whether a PIO is going to require correction of the control signals applied to the aircraft controls.

Sklar and Gardner fail to supply any of the deficiencies of Cox, or of the prior art which the Examiner has attributed to Applicant. Therefore, Applicant submits that, pursuant to the foregoing discussion, claims 1-84 in the subject application are patentable.

Request for Allowance

It is believed that this Amendment places the application in condition for allowance, and early favorable consideration of this Amendment is earnestly solicited.

The Office is hereby authorized to charge any fees, or credit any overpayments, to Deposit Account No. **11-0600**.

Respectfully submitted,

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